



High-yield

- Pathology on Barium
- Vascular impression on Esophagus
- Crohns vs UC
- HFL
- Pancreatic masses & Cysts
- Heterotaxy

Esophagus

* A ring above 1 vestibule

B " below  $\Rightarrow$ at GEJ
if narrowed $\Rightarrow$ Schatzki ring

* GEJ if < 13 mm $\Rightarrow$ Dysphagia

* Z-line: * Squamo-columnar junction
* Endoscopic finding, m.b. seen as serrated thin line
* $\neq$ B-ring

* Pharynx Above Cricopharyngeus ms

Esophagus below " "

* Eosinophilic esophagitis:

- Young σ with long history of dysphagia
($\pm$ atopy & peripheral eosinophilia)

- Ba $\rightarrow$ Concentric rings

- Ht $\rightarrow$ steroids (not PPI)

* Candidiasis

- Plaques $\neq$, nodularity & fold thickness
- If severe $\Rightarrow$ Shaggy irregular lumen
 $\rightarrow$ longitudinally oriented
- 2% to AIDS, achalasia, scleroderma

* Glycogen acanthosis:

- DD candidiasis but Old age, asymptomatic
↳ Multiple nodules.

* Herpes ulcers

- Small & multiple
- Halo

* CMV & HIV → large flat ulcer

* Barret

- High Stricture
- H. H.
- Reticular mucosal pattern.

* Cancer:

- Irregular contour
- Abrupt edges (Shoulder)
- Stage 3 → adventitia
- 4 → invasion into adjacent structures

* SCC

- Black, smoker, alcoholic
- Alkaloid ingestion
- Mid esophagus

* Adeno

- White, Ch. reflux (PPI) → Barret
- Lower esophagus

* Varices

- linear serpentine FD
- Flattens if good bolus distend
- ! esophagus DD varicoid carcin

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* Uphill varices:

- Portal HTN
- lower Esophagus

Down hill

- SVC obstruction
- upper 1/2

* Esophageal (enteric) duplication cyst:

- Post. mediastinum
- Ileum ~~is~~ (enteric), esophagus $\Rightarrow$ 2
- If large $\rightarrow$ dysphagia, dyspnea.

* Lateral pharyngeal pouches:

- Weak area of thyro-hyoid membrane
- Glass blowers or wind instrument players.

* Zenker diverticulum:

- Diverticulum in the back of hypopharynx.
- Site of weakness = Killian dehiscence
- Above Crico-pharyngeus

* Killian-Jamieson:

- Anterior & lateral in ex. esophagus
- Below attachment of Cricopharyngeus on Cricoid
- lat. to suspensory lig.

* Traction diverticulum

- Triangular
- Mid-esophagus
- will empty

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* Pulsion diverticulum:

- Round

- will not empty (no ms. wall)

* Epiphrenic diverticulum:

- Rt. side, above diaphragm

- Pulsion type

* Pseudo-diverticulosis:

- Ch. reflux esophagitis

- Candida is association (not causative)

- Stricture seen in 90%.

* Papilloma:

- ~~benign~~ benign mucosal lesion

- Hyperplastic squamous epith.

* Feline esophagus:

- Transient transverse folds

- m.b. (N) finding

- Ass. w/ esophagitis.

* Esophageal spasm:

- tertiary contractions.

- Nutcracker esophagus → manometry

> 180 mm Hg.

* Esophageal webs

- cx. esophagus

- Thin mucosal membrane

- RF for hypopharyngeal or esophageal Carc.

- Plummer vinson S: fe def. anemia, dysphagia, thyroid problems, spoon-shaped nails.

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* Dysphagia lusoria:

- Dysphagia d.t. Aberrant Rt. SCA

* Vascular impressions:

- Ant. esophageal, post. trachea →
pulm. sling

- Post. esoph., ant. trachea →
Double aortic arch

- Anterior trachea →
innominate A.

- Post. esophagus: →
Rt. arch with Ab. Lt. SCA
or
Lt. arch with Rt. SCA

* Achalasia:

- Absent 1st peristalsis
- Bird's peak on barium
- Vigorous achalasia: early / mild form with non-propulsive contractions
- ♀ > ♂, but cancer ♂ > ♀
- ↑ risk of cancer (SCC) 20 yrs later
- ↑ " " candida

* Pseudo / 2nd achalasia:

- 2nd to GE cancer
- will not relax (QD true)

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* Scleroderma:

- Esophagus affected 80%.
- Incompetent LES → ch. reflux
→ Scarring → Barret → adenoca
- Lung changes (NSIP)
- SB hide bound

* Drug-induced ulcers:

- At aortic arch or distal esophagus

* Crohn's ulcers → confluent

* Long stricture:

- NGT
- RTH
- Caustic ingestion

(Stomach)

* H. pylori gastritis → antrum

* Zollinger-Ellison:

- Duodenal ulcers (bulb) #, stomach,
Jejunal ulcers

* Crohn's → antrum

* Menetrier's : → fundus, spares antrum

* Lymphoma : crosses ! pylorus (also adenoca)

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* Gardner's:

- FAP (hyperplastic stomach, adenomatous bowel polyps)
- ⊕
 - Desmoid
 - Osteomas
 - Papillary thyroid cancers.

* Turcots: FAP + Gliomas & Medulloblastomas

* Lynch's: Hereditary non-polyposis's

- DNA mismatch repair
- Cancer in any site

* Peutz-Jeghers: Hamartomas

- Mucocut pigment
- SB & LB CA
- Gyn CA

* Cowden: Hamartomas

- Breast CA
- Thyroid CA
- Lhermitte-Duclos: post. fossa tumor

* CronKite-Canada: Hamartomas

- Stomach
- SB & LB
- Ectodermal skin, hair, nail)

* Juvenile polyps → hamartomas

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* GIST

- # mesenchymal GIT tumor
- 70% in stomach.
- > 40 y (old)
- 90° bet. mass & stomach wall
- May be mx. → large > 10 cm
- → mets (Not LN)
- ↑ in NF

* Carney Δ : Extra-adrenal pheo

- GIST
- Pulm. hamartoma

* Mx. vs. Benign ulcer

width > depth

- within lumen

- Nodular irregular edges

- Folds adjacent to ulcer

- Carman meniscus sign

Depth > width

Behind expected lumen

sharp

Folds radiate to ulcer

Hampton's line

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* Gastric Cancer:

- 95% CA, 5% lymphoma
↳ 95% Adeno

* Gastric CA:

- Old age ~ 70y
- RF: H. pylori
- ↑ risk in gastric remnant after gastrojejunostomy for peptic ulcer (2-6X)
- Mets to ovary → Krukenberg
- Lt. supraclav. LN → Virchow

* Gastric lymphoma:

- MALT (1st) or 2nd (systemic)
- Extra-nodal NHL → stomach
- Rarely causes outlet obstruction.
- variable shape, n.b. linitis; cross ! pylorus
- Can rupture with CTH.

* Gastric CA:

- More likely to cause Gastric outlet obstruction
- " " " be in distal stomach
- " " " extend beyond serosa
- " " " focal mass.

* Menetries' disease:

- Bimodal age (child-related to CMV)
- ↓ Albumin

- * Ram's horn deformity = pseudo-Billroth I
 - Tapered antrum
 - DD - Peptic ulcer
 - Granulomatous: TB, Sarcoid, Crohn's, Syph
 - Carcinoma

* Gastric volvulus:

- Organo-axial:

- More common

- Old ♀, para-esophageal hernia

- Mesentero-axial:

- Child >

- Causes obstruction & ischemia

* Gastric diverticulum: Fundus, DD adrenal lesions.

* Gastric varices:

- Isolated → Splenic v. thrombosis

(d.t. pancreatitis or pancreatic tumor)

* Enlarged area gastricae:

- Old age

- H. pylori

- Next to ulcer

* Multiple gastric ulcers

→ think Chronic aspirin HA

Multiple Duodenal ulcers

→ Z E \$

* Afferent loop \$

- uncommon ex. of Billroth 2
- Obstruction of 1 afferent
- Acute (closed loop) or Chronic
- Afferent limb dilatation
- GB dilatation
- Pancreatitis

* Jejuno gastric intussusception:

→ Gastric obst. → m.b. fatal

* Bile reflux gastritis:

- After Billroth I or II
- Fold thickness & FD

* Gastro-gastric fistula

- After Roux-en-Y
- Chronic painless process

* Target sign:

- GIST
 - Pancreatic rest (ectopic)
 - Adeno Ca
 - Lymphoma
 - Mets
- } single target
- } multiple or single

* Clover-leaf sign: Healed duodenal ulcer

(Small bowel)

- Whipple- Tropheryma Whipplei

- White ♂ > 50y

- Duodenum & proximal jejunum

- Thick nodular folds

- Sand-like nodules in jejunum = diffuse micronodules.

- LN with near fat density.

- Pseudo Whipple:

- MAI infection

- AIDS with CD4 < 100

- Jejunal nodules + retro-peritoneal LNs + splenomegaly.

- SMA

- Compression of 3rd Duod.

- Recently lost a lot of weight

Bowel Pathology

Folds

Thin folds
+
Dilatation

- IO
- Ileus
- Scleroderma
- Sprue

Thick folds

> 3mm

Straight

Segmental

- Ischemia
- RTH
- Hge
- Adjacent inflammation

Diffuse

- low protein
- venous congestion
- Cirrhosis

Nodular

Segmental

- Crohn's
- Infection
- Lymphoma
- Mets

Diffuse

- Whipple
- Lymphangiectasis
-
-
- Lymphoid hyperplasia

Filling defect

2-4 mm
uniform

↓
lymphoid
hyperplasia

> 4 mm
or
variable

- CA
- mets (melanoma)

Loop separation

e/out
tearthy

- Ascites
- Crohn's
- Lymphoma
- LN
- mesenteric tumors

e/tearthy
Carcinoid

* Complications of Meckels:

- Diverticulitis → DD: Appendicitis
- GI bleeding (gastric mucosa) → Meckel scan
- Intussusception (inverted diverticulum)
- Obstruction

* Infections of proximal SB:

- Giardia
- Strongyloides

* Infection of terminal ileum:

- TB
- Yersinia

* Duodenal fold thickening:

- Pancreatitis
- Cholecystitis
- Crohns (Colonic) → fistula
- Chronic dialysis

* Jejunal diverticulosis:

- Along mesenteric border
- Malabsorption

* SB CA — Adeno CA

- Duod ~~CA~~
- ↑ in Celiac dis., regional enteritis
- Focal circumferential wall thickening

* SB lymphoma:

- NHL > HD (desmoplastic)
- RF - Celiac, Crohn's, AIDS, SLE
- Usually no Obst

* Carcinoid:

- Mass + desmoplastic stranding
- Sunburst appearance (Ca^{++}) ~~mes~~
- Young age
- Liver mets: (hypervasc) $\Rightarrow$ \$
- Distal appendix ~~#~~ 50% $\rightarrow$ best prognosis
- Terminal ileum 2nd 40%
- Rt sided heart valves $\Rightarrow$ TR ~~#~~
- MIBG or Octreoscan

* Inguinal hernia: M:F = 7:1

Direct

Indirect

* less common

* more common

* Defect in Haselback Δ

- failure of processus vaginalis to close

* Medial to inf. epig. Art

- lat.

* Not covered by internal spermatic fascia

- covered

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* Femoral hernia:

- Old ♀, Rt. > Lt.
- Medial to EU, post. to ing. lig.
- ↑↑ obst.

* Obturator hernia:

- Old ♀
- ↑ abd. pressure (ascites, COPD →)
- Usually asymptomatic

* Lumbar hernia:

- Superior (Grynfeltt-Lesshaft) > inferior (Petit)
- Cong. or Acq. (surgery)

* Spigelian hernia:

- Along Semilunar line
- Through transverse abd. aponeurosis
- level of arcuate line

* Richter H : one wall of bowel

* Littre : + Meckel's

* Amyand : + Appendix

* Hernia after Roux-en-Y gastric bypass

- ↑ Risk → Lap > open (less adhesions)
- More wt. loss → more hernia

- Where → Defect of transverse mesocolon (retro-colic)
- Mesenteric defect of entero-enterostomy
- Behind the Roux limb (Petersen type)

* # internal hernia = Para duodenal

→ Lt. >> Rt. 75% (DJ junction)
left { → Sac of bowel bet. pancreas & stomach,
 (to l. left of lig. of Treitz)
 → Contains IMV & left Colic Art.

Rt → behind SMA, below 3rd part of Duod.
 (fossa of Waldeyer)
 → non-rotated SB, normally rotated LB

(Large Bowel)

* Crohn's

- Young age (15-30 y)
- 2nd peak 60-70 y
- From mouth to anus
- Discontinuous
- Stomach → antrum → Ram's horn
- Duod.: rare, always e/ antrum
- SB 80%
- Terminal ileum # → string sign
- After surgery → neo terminal ileum involved
- Colon: Rt. sided, spares recto/sigmoid
- Cx. - Fistula, abscess
- fatty liver
- Sarcoiditis.

Buzzwords

- Squaring of l. folds (early)
- Skip lesions
- Pseudo-poly
- Proud loops
- Filiform polyp
- Cobblestoning
- Pseudo-diverticula
- Enlarged LN
- Creeping fat

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- * UC = Young age 15-40y ♂ > ♀
 - 2nd peak 60-70y
 - Rectum 95% → rectosigmoid
 - TI 5-10% (backwash ileitis)
 - Continuous (not skip)
 - Ass. w/ Colon CA, 17 sclerosing cholangitis, arthritis
 - Ba - Diffuse granular mucosa
 - Ahastral
 - Lead pipe

* UIC + LNs (large) → suspect Colon CA

- * Crohns : more common than UIC in
- ① GB stones
 - ② Pancreatitis
 - ③ Hepatic Abscess

UIC more common → PSC

* UC more common than Crohns in USA

* Diverticulosis vs diverticulitis

↓	↓
Bleeding (more common)	Fistula (more common)

* Epiploic appendicitis → Lt. # } self-limiting
omental infarction → Rt. # }

Ameba

- Bloody diarrhea.
- Abscess (liver, spleen, brain)
- Toxic megacolon
- Endoscopy: flask-shaped ulcers
- Ba: coned cecum
- spares TI

TB.

- Coned cecum
- Involves TI
- Ulcers & strictures
- Fleishner sign: gapping ICV
- Stierlin " : Narrowly TI

CMV:

- immunosuppressed
- Deep ulcers → perforation
- Cowdry Type A intra-nuclear inclusion bodies

Cro Diff

- After AB etc
- ↑↑ WBC count
- CT → Accordion sign
- Ba → thumb-printing, ulcers
- Toxic megacolon.

Typhlitis

- limited to cecum
- severe neutropenia

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- Adenoca : - Apple-core
- Rt. → bleeding → anemia
- Lt. → IO

- SCC - Anus, HPV

- Adenoma: - # benign tumor of colon & rectum
- Villous type → Mx.

- Rectal cancer:

- 98% Adenoca
- ttl Total mesorectal excision
- Lower (< 5 cm from anorectal angle)
→ more recurrence.
- Stage 3 → peri-rectal fat (MRI)
invasion

- Appendicitis

- > 6 mm by US or CT

- Appendicular mucocoele:

- Onion sign by US

* Sigmoid volvulus

cecal volvulus

- Old age (ch. constipation)
- Coffee bean sign
- Inverted 3
- Frimann Dahl's
- Points to RUQ
- Recurrence 50%
- More common

- Younger 20-40y
- Points to LUQ
- Much less common

* Cecal Bascule :

- Anterior folding without twist
- Focal ileus (dilatation) in mid-abdomen

* Toxic Mega colon:

- * Cause - UC ~~##~~
- ~~##~~ Crohn's
 - C. Diff.

* PXR Erect → transverse colon dilated
Supine → Rt. & Lt. " "

- * Lack of haustra ~~##~~
- * Pseudo polyps
- * Ex. → peritonitis
- * Barium X contra-indicated

- ## * Behcet
- Mouth & penile ulcers
 - looks like Crohn's → Ileocecal
 - Pulm. A. aneurysm

- ## * Ogilvie = Colonic pseudo-obst.
- Marked diffuse ~~##~~ colonic dilatation
 - No transition point

* Gossypiboma:

- Retained Cotton product or surgical sponge
- + inflamm. reaction (DD → Abscess)

* Ba. peritonitis

Acute - Severe inflamm → ascites → hypovolumic shock
(treat → IV fluids)

chronic: Granulomas & adhesions → IO.

* Barium intravasation: rare & fatal (pulm. embolism)* Pseudomyxoma peritonis:

- Ruptured appendicular mucocle ← ^{cystadenoma} u - CA
- Mucinous tumor (ovary, colon, App) with peritoneal spread

* Peritoneal carcinomatosis = deposits

Retrovesical space # Site

* Omental Cake: → displace! bowel posteriorly* Peritoneal mesothelioma:

- Rare
- 30-40 y after asbestos exposure

* Cystic peritoneal mesothelioma:

- Benign, rare
- Not related to asbestos
- Young ♀ (30s)

* Mesenteric Lymphoma:

- NHL

- Sandwich sign: mesenteric vessels.

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Liver & biliary

- Injury to bare area of the liver $\rightarrow$ retro-peritoneal bleeding (not covered by peritoneum)
- Couinaud system $\rightarrow$ segments
- Caudate lobe supplied by Rt. & Lt. PV
 - Direct connection to IVC
- ~~anatomic~~ variant = replaced RHA (from SMA)

- MRI
 - Pancreas: brightest T_1 structure in body
 - Spleen: H₂O SE $\downarrow T_1$, $\uparrow T_2$
 - Liver: $T_1 \uparrow$, $T_2 \downarrow$

- C/I/L ratio > 0.75 = 99% specific for cirrhosis

In Portal HTN

- Thick Rt. Colon $\rightarrow$ Colopathy
- " Gastric wall $\rightarrow$ Gastropathy

- MRI " Nodule within nodule appearance"
 - = T_2 dark nodule with central T_2 bright
 - = Mx. transformation of regenerative nodules to HCC

- Regenerative nodules: $T_1 \downarrow$, $T_2 \downarrow$, no C (iron)

- Dysplastic " $T_1 \uparrow$, $T_2 \downarrow$, $\pm$ C (no) (fat & glycogen)

- HCC: $T_2 \uparrow$, C++

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- IHT = OWR : AD
 - AM in liver $\rightarrow$ massively dilated HA
 - " " lung $\rightarrow$ brain abscess.

- Viral hepatitis - starry sky (edema)

- HCC can occur in acute Hep. BV

- Pyogenic liver abscess:

- Single $\rightarrow$ Klebsiella

- Multiple $\rightarrow$ E. coli

- + Gas (specific)

- Double target sign

- Amebic abscess - Extra-hepatic extension

- If left lobe $\rightarrow$ emergency (rupture in pericard)

- Candida $\rightarrow$ Bull's eye

- Hydatid disease $\rightarrow$ water lily & sand storm

- Schistosomiasis: Tortoise shell

* Hemangioma: - # Benign tumor

- ♀ : ♂ $\approx$ 5 : 1

- Enlarge in preg.

- Follows aorta in CT/MRI, T2 $\uparrow\uparrow$

- Change appearance in US

- Echogenic 65% (except in fatty)

- Enhanced through transillumination

- No flow by Doppler

- If biopsy $\rightarrow$ Core not FNA

- Cat rare

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FAT: usually < 8cm

- 2nd # benign tumor
- 4/5 Doppler → spoke-wheel
- CT → Art. C+
- MRI → ISO (stealth lesion)
- Central scar: T₂ bright, delayed C++
- Sulfur colloid: +ve in 40%
- Not related to OCP

Hepatic adenoma: usually > 8cm

- ♀, OCP, regress after stoppage
- ♂: anabolic steroids
- Multiple: glycogen storage disease (von Gierke) or liver adenomatosis
- Rt. lobe > Lt.
- Management: stop OCP & fup →
If < 5cm → fup
> 5cm → resection ??

Risk of
bleeding

Risk of
cancer
(rare)

- Sulfur → cold
- Microscopic fat → MRI out-of-phase ↓

* HCC

- Hepatic v. invasion more specific than PV
- AFP ↑ in 80%
- Gatt

* Fibro-lamellar HCC:

- Young pt., not cirrhotic, (N) AFP
- ± Ca⁺² (> HCC)
- Central scar: T₂ ↓, no C+
- Gallium +ve

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* Cholangiocarcinoma:

- Elderly ♂, Painless Jaundice
- RF: PSG, Clonorchis sinensis, ...
- Imagn - IHBRD
- Delayed C+
- Capsular retraction

* Angio Sarcoma:

- # Sarcoma of liver
- RF: Thorotrast
- Arsenic, PVC
- RTH
- Multi-focal, bleeding

* Biliary Cystadenoma:

- Middle age ♀
- Pain + jaundice
- Uni or multi-locular
- Can't be DD from Carcinoma

* Mets to Liver

- # Colon
- Calcified = mucinous (colon, pancreas, ovary)
- Hyperechoic mostly hypervascular
- Hypoechoic " hypo "

- * Small nodules too small to characterize
⇒ mostly benign.

* Hepatic AML:

- Gross fat → ↑ T₁ & T₂ SI
- 50% → no fat
- Tubercous sclerosis

* FNH → sulfur colloid +ve

Hemangioma → RBC scan +ve

HCC & Abscess → Gallium

focal fat → Xenon +ve

* Fatty liver

U/S → bright > RTK

CT → NCCT < 40 HU

CECT ??

PX phase → < 100 HU or
< spleen by 25 HU

MRI : out of phase ↓

- Budd-chiari

↑ in preg.

- Acute → Flip-flop pattern

PV phase → central ↓, peripheral ↑

- Nutmeg liver (Congested)

BC &

[- Hepatic VOD

[- Rt. HF

← [- Constrictive pericarditis

* Regenerative nodules of BS

↑ T₁ & T₂

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* Massive caudate lobe hypertrophy?

- BC\$: Budd-chiari
- PSC : 1st sclerosing cholangitis
- PBC : " biliary cirrhosis

* Hepatic VOD

- Small venules obst.
- Jamaica (Alkaloid bush tea)
- USA → RTH & ETH

* Hemochromatosis

MRI - ↑ T1, ↓ T2

- In-phase: ↓, out-of-phase ↑

CT - Dense

- * 1st hemochromatosis → pancreas (+ liver)
(Genetics) (+ heart + thyroid)
- 2nd → spleen (+ liver)
(Acq)

* Hemochromatosis → bronzed DM
→ HCC & Colorectal CA

* DD dense liver :

- Hemochromatosis
- Wilson
- Amiodarone
- Gold tit

* Pseudo-cirrhosis = breast cancer

* Cryptogenic cirrhosis = idiopathic

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* Liver transplant:

- Adult : Segment V & VIII
- Peds : " II & III

* Non P Transplant Ws

- RI = 0.5 - 0.7
- HA PSV < 200 cm/sec
- ACC time < 80 msec

* Non P liver blood supply

PV 70% > HA 30%

transplant HA > PV

* HA thrombosis:

- Early < 15 days
- late years → ch. rejection

* Syndrome of impending Thrombosis

3 - 10 days post TX.

- 1st → (N) → no diastolic flow
- ↓ Systolic PSV & ↓ RI < 0.5
- Loss of flow

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Biliary

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- ~~#~~ Cause of obst. jaundice = benign stricture
- Stone → stasis → cholangitis → abscess
 - △ fever, RUQ pain & jaundice
 - Intra & extra (72%)
- PSC - Multi-focal strictures (? Idiopathic) + Saccular dilatation
 - Ex. Cirrhosis & Cholangiocarcinoma
 - Cirrhosis with Central regenerative hypertrophy
 - ASS IBD (UC >> Crohn's)
 - th transplantation → recurrence 20%.
- AIDS cholangiopathy:
 - Usually d/t Cryptosporidium
 - Multiple strictures.
 - Papillary stenosis 60%.
 - Extra-hepatic stricture < 5 mm
 - No saccular dilatation
- Oriental cholangitis = recurrent pyogenic
 - Dilated ducts, full of pigmented stones
 - Straight rigid IHBR
- PBC:
 - Middle age ♀, auto-immune (AMA)
 - Early: asymptomatic, (N) ducts
 - Late: Irregular dilatation of IHBR
 - No CBD
 - ↑ risk of HCC

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- choledochal cyst:

- ~~Extra~~ hepatic only $\rightarrow$ I, II, III

- Intra $\rightarrow$ IV

- Intra + extra $\rightarrow$ IV

* # type I - focal dilatation of CBD

* Caroli

- AR

- Saccular dilatation of IHBR

- Central dot

- Ass. e Polycystic Kidney
MSK

- Cx. Cholangio CA

- Intra ductal stones

- Cholangitis

- Cirrhosis

- GB stones:

75% Cholesterol

25% Pigment

- Adenomyomatosis: Comet tail artifact

- Mirizzi $\$$

- $\uparrow$ incidence of GB cancer

- " in low cystic duct insertion

* High RI > 0.7 is liver

- * Post prandial
- Age
- Cirrhosis
- Hepatic congestion
- Transplant rejection

low RI < 0.5 :

* Proximal Art. narrowing

- Atherosclerosis
- Stenosis (transplant)
- Median arcuate lig. Compression

- Peripheral vascular shunts

- Cirrhosis
- Post-trauma
- ORW = HHT

- Cirrhosis Fibrosis $\rightarrow \uparrow RI$ } m.b (N)
 Shunts $\rightarrow \downarrow RI$

- Hepatic veins:

$\uparrow$ pulsatility $\rightarrow$ TR, CHF

$\downarrow$ " $\rightarrow$ Cirrhosis, hepatic venous obst.

Absent $\rightarrow$ BCs

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PV (N) velocity 20-40 cm/sec

* $\uparrow$ pulsatility = TR, CHF, cirrhosis with shunt

* Reversed flow = PHTN

* Absent " = thrombosis, HCC, ...

* Slow flow (< 15 cm/sec) $\Rightarrow$ PHTN

The Pancreas

* CF : causes pancreatic ~~fibrosis~~

- ① fatty replacement $T_1 \uparrow$ #
- > ② fibrosis T_1 & $T_2 \downarrow$
- ③ Recurrent pancreatitis
- ④ Small pancreatic cysts

$\Rightarrow$ Lipomatous pseudo hypertrophy #

tl enzyme replacement $\rightarrow$ fibrosing colonopathy
(thickening of proximal colon)

* Schwachmann-Diamond S.

- 2nd ~~xx~~ pancreatic insufficiency in kids
(after CF)

- Diarrhea + Short Stature (metaphyseal chondroplasia) + eczema.

- lipomatous pseudo-hypertrophy

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- Pancreatic lipomatosis : have duct (vs. agenesis)

- CF ✗

- Cushing

- Steroid use

- Hyperlipidemia

- Schwachman Diamond ✗

- Annular pancreas:

- Failure of ventral bud to rotate → encasement of Duod.

c/o - child → Duod. obst.

Adult → Pancreatitis

- Post-prandial fullness

Types

- Complete

- Incomplete → crocodile jaw appearance

- Extra-mural : drains into main duct

- Intra - " " " " duodenal lumen

- Dorsal pancreatic agenesis:

- DM

- Polyseplenia.

- Pancreatic trauma:

- IF duct injury → Surgery (ERCP, MRCP)

- Delayed ex. → fistula, abscess

- May be subtle : focal pancreatic enlargement, fat stranding

- Acute pancreatitis

- ✗ GB stones & alcohol

- ERCP → mild pancreatitis

- Trauma ✗ cause in child > viral

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Severity of Pancreatitis $\Rightarrow$ Balthazar Score

Mild $\rightarrow$ no necrosis

Severe $\rightarrow$ "

$\rightarrow$ 1st 2 wks $\Rightarrow$ inflamm. phase

$\rightarrow$ 3rd & 4th wk $\Rightarrow$ infection $\uparrow$

- Interstitial pancreatitis (IP): No necrosis, no fluid collection

- Exudative (EP): no necrosis, + fluid collect.

- Necrotizing (NP): + necrosis, + fluid collection

- Acute peripancreatic fluid collection (APF) < 4 wks

Pseudocyst: > 4 wk, encapsulated

- Acute necrotic collection (ANC) < 4 wk, necrosis

- Walled-off necrosis (WON): > 4 wk, encapsulated + necrosis

Time	Necrosis	fluid collection	Encapsulated
------	----------	------------------	--------------

< 4 wk

IP

—

EP

—

NP

+

ANC

+

> 4 wk

pseudocyst

—

+

+

WON

+

+

+

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* Vascular ex. of pancreatitis:

- Splenic vein thrombosis → isolated gastric varices
- PV
- Pseudo aneurysm of GDA or splenic A

* Gas in infected fluid collection seen in only 20%.

* Chronic pancreatitis:

- Early: ↓ T₁ signal, delayed C+ & dilated side branches.

- Late: - small atrophic pancreas

- Pseudo cyst (30%)

- Dilatation of ! pancreatic duct with Ca²⁺ → most ch. ch.

Irregular

< 50% of AP gland diameter

- CX.

→ Cancer (vs. focal enlargement → pseudotumor)

DD
Cancer

* Pancreatic divisum: # anatomic variant of pancreas

(N)

- Santorini → Superior, small (minor duct)

- Wirsung → posterior, major duct

Divisum - Main portion of ! pancreas drained by Santorini → accessory (minor) papilla
→ ↑ incidence of pancreatitis.

* Auto-immune pancreatitis

- ↑ IgG4 . No duct dilatation or Ca²⁺

- ~~the~~ steroids

 - Sausage-shaped pancreas, with delayed rim C+

* Groove Pancreatitis

- Duodenal stenosis and/or biliary stricture
- Soft tissue mass + dilated CT
- DD Cancer.

* Tropic Pancreatitis:

- Young age, malnutrition
- ↑ risk of adenocarcinoma
- Multiple large stones within dilated pancreatic duct

* Hereditary Pancreatitis

- Young age
- ↑ risk of Adenocarcinoma
- SPINK - I gene

* Ascariis - induced pancreatitis* Ig G4

- 1 → Auto-immune pancreatitis
- 2 → Retro-peritoneal fibrosis
- 3 → sclerosing cholangitis.
- 4 → Inflammatory pseudotumor
- 5 → Riedel's thyroiditis

* Cystic pancreatic lesions

- ① Pseudocyst
- ② Serous cystadenoma
- ③ Mucinous
- ④ IPMN - Main duct or sidebranch
- ⑤ SPN
- ⑥ Simple cyst

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* Simple cyst :

- rare

- VHL, PCKD, CF

* Serous Cystadenoma (Grandma)



= Microcystic (sponge) [$< 2\text{cm}$ each] $\gg$

Macrocystic (unilocular)

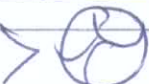
- Old ♀

- Pancreatic head 70%

- Not communicating with ! duct

- $\pm$ Central Scar $\pm$ (Ca $^{+2}$ 20%)

* Mucinous : - unilocular $\gg$ multic (2cm)



- ♀, 50 ys

- Mx. or premx.

- Body & tail.

- Not communicating with ! duct

- Peripheral Ca $^{+2}$

* IPMN

- side branch more common than main duct

- " " " " " " " " " " " "

side branch :

- Small cystic mass in head

- $\pm$ duct dilatation

- if $< 3\text{cm}$ $\rightarrow$ benign

Main duct :

- Duct dilatation $> 10-15\text{mm}$

- Gland atrophy $\pm$ Ca $^{+2}$ (pp ch. Pan)

- $\pm$ Enhancing nodules / mass

SPIN

rare

- low-grade Mx.
- young ♀ (30s), asian or black
- large
- Tail
- Thick capsule
- solid portion with progressive filling (like hemangioma)

* Adenocarcinoma:

- RF: smoking
- Ass. w/ Trousseau's s. (migratory thrombo-phlebitis)
- Involvement of Celiac or SMA - irresectable
- " " " " GAD = no problem

↑ CA 19-9

BFT - wide duodenal sweep, reverse 3 sign- Hereditary:

- HNPCC
- BRCA mutations
- Ataxia-telangiectasia
- Peutz-Jegher

* Peri-ampullary carcinoma:

- better prognosis than pancreatic Adinoca

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- Neuroendocrine tumors : $\rightarrow$ esp. Gastrinoma

- Ass. of MEN 1 & VHL

- Insulinoma #

- 90% benign

- Small & Solitary

- Gastrinoma : 2nd #

- Mx. 40%

- ZE & jejunal ulcer

- Non-functional (3rd #)

- Mx. 80%

- large + mets

- Pancreatic tumors in children:

Age 1 : Pancreatic blastoma

6 : Adeno CA

15 : SPN

- Whipple : Resection of

- Pancreatic head

- Duodenum

- Gastric antrum

- GB

- + Gastro jejunal

Pancreato-jejunal

hepato-cholecho jejunal

} anastom

- Pylorus preserving $\rightarrow$ debate

= pancreato-duodenectomy

CX. of pancreatoduodenectomy:

- Delayed gastric emptying
- Pancreatic fistula
- Infection

Pancreatic transplant:

Anatomy

- For severe type I DM with renal transplant if RF
- Art. supply - Donor SMA $\rightarrow$ inf. PDA $\rightarrow$ head
- Donor splenic A $\rightarrow$ body & tail
- Venous drainage - Donor PV
- recipient SMV
- Exocrine drainage - old $\rightarrow$ UB
- recent $\rightarrow$ bowel

Graft failure

CX.

- Acute rejection #1
- Splenic V. thrombosis #2 (< 6wk)
- Reversed diastolic flow (RI not of value)
- ~~CX.~~ Acute pancreatitis (< 4wk): old & recent, usually mild
- ~~Chronic rejection~~ Chronic rejection: Shrinking transplant

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Spleen:

- (N) 20 HU > Liver
> echogenic than liver

* Rt. sided

- Lt. lung → 2 fissures
- Asplenic
- Cardiac malformations
- Reversed Ao/IVC

* Lt. sided

- Rt. lung → 1 fissure
- Polysplenia
- Biliary atresia
- Azygous continuation of IVC

* DD splenule vs Pathologic LN

+ve ← Sulfur colloid → -ve

- * ITP → splenectomy → recurrence of symptoms
→ Hypertrophied accessory spleen.

* Wandering spleen:

- Ass. intestinal malrotation
- torsion & infarction
- Ch. partial torsion → splenomegaly & gastric varices.

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Post traumatic splenosis

DD peritoneal mets

⇒ sulfur colloid

Gamma - Gandy bodies

Micro hge → siderotic nodules

- GRE → most sensitive

Sarcoidosis

Involves ! spleen in > 50%

- splenomegaly ± nodules

Peliosis

- Blood-filled cystic spaces

- Liver ± spleen

who? {

- ♀ with OCP
- ♂ " anabolic steroids
- HIV
- Renal transplant
- Hodgkin

Splenic A. aneurysm:

- ~~#~~ visceral aneurysm

- Pseudoaneurysm → trauma, pancreatitis

- ♀, multi-para ↑↑

- Saccular, mid / distal segment

- DD islet-cell tumor → NEVER BIOPSY

Splenic V. thrombosis

- cause: Pancreatitis, diverticulitis, Crohn's

- lead to gastric varices

- SCD → splenic infarction

Splenic infections

- Histoplasmosis ~~#~~ $\Rightarrow$ multiple Ca^{+2}
- TB: like histoplasma
- Brucella: Solitary Ca^{+2} $>$, 2cm $\pm$
Bull's eye 

* Splenic Abscess

- Immuno-Competent $\rightarrow$ Salmonella (SCD, trauma)
- " Compromised $\rightarrow$ fungi, TB, MAI, & PCP
- $\rightarrow$ Multiple micro abscesses.
- Fungus $\rightarrow$ bull's-eye

* Small Spleen:

- SCD
- Post - RTH
- " - Thorotrast
- UC $>$ Crohns

* Felty's

- Rh. Arth.
- Neutropenia
- Splenomegaly.

* Post-traumatic pseudocyst

- ~~#~~ 3 cystic lesion in pancreas.
- thick wall $\pm$ Ca^{+2}

* Epidermoid cyst: 2nd ~~#~~

- Solitary
- Peripheral Ca^{+2} 25%.

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- Hydatid cyst: 3rd #
 - water-lilly
 - hydatid sand.

- Hemangioma: # benign tumor
 - Delayed washout or progressive filling

- Lymphangioma:
 - Child
 - subcapsular
 - Solitary or multiple or diffuse.

- Littoral cell angioma:
 - Hypersplenism
 - Multiple small hypodense foci
 - MRI $\rightarrow$ hemosiderin ($\downarrow$ T₁ & T₂)

- Angiosarcoma:
 - Aggressive
 - CT - Splenomegaly
 - Ill-defined hypodense mass, necrosis
 - $\pm$ rupture
 - Prior thorotrast

- Lymphoma:
 - # Splenic Mx. tumor
 - Splenomegaly # ($\pm$ nodules)
 - CT: $\downarrow$, T₁: $\downarrow$, PET ++

- Splenic mets: Breast, lung

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MCD

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① SBA Currie

- Scleroderma: - upper $\frac{1}{3}$ $\rightarrow$ skeletal ms $\Rightarrow$ not affected
- Oesophageal dilatation & shortening
 $\rightarrow$ stricture & superficial ulcers.
- Splenic injury = 50% + rib fx.
10% + lt. k injury

- TEF with gaseless abdomen...?



- Type B (Atresia + proximal fistula)



NB Type C is ! most common (75%)



~~A~~ = proximal atresia & distal TEF

D $\rightarrow$ Atresia + proximal & distal F

E $\rightarrow$ Fistula without Atresia

A $\rightarrow$ Atresia without fistula

fistula
ms

A P D PD F

Gaseless Abd = No distal fistula

Type = A & C

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* Cecal Volvulus vs Sigmoid

haustiation +ve

- No

- Apex above T10 level
- pelvic overlap sign
- liver " "
- Coffee bean " "

- * Typhlitis - child with leukemia or lymphoma
- ~~Barium~~ Barium bar. perforation is common

- * MEN 2b : - Medullary thyroid CA
- Pheochromocytoma of GIT $\rightarrow$ IO
- Mucosal neuromas / Cutaneous
- Marfanoid + prognathism.

- * Gastrinoma vs insulinoma by CT/MRI
- $\Rightarrow$ Size $< 1\text{ cm}$ $\rightarrow$ insulinoma
- Large $\rightarrow$ Gastrinoma

- * Incidence of mets. in carcinoid tumor $\uparrow$ in
- $\uparrow$ size of $\geq 1\text{ cm}$ tumor
- Ileal (30%) $>$ appendicular ($< 5\%$)

- * Esophageal tumor + Ca^{+2} = Leiomyoma

- * Contra-indication to Whipple surgery?

Absolute $\rightarrow$ hep. Art. invasion, celiac, SMA, Aorta
Relative $\rightarrow$ splenic v., PV (ascites, mets)

* Schatzki ring best seen on prone position.

* pseudomyxoma peritonii

- ♂ : appendix, ♀ : Ovary
- th : intra-peritoneal cTH
- Compl. : IO.

* Ulcerative Colitis & pseudo-membranous colitis
 ⇒ rectum involved

Infectious colitis ⇒ Rt. colon

Ischemic ⇒ Lt. side

* Hepatic adenoma : ↑ T₁WI = fat &/or hge

FNH usually < 5 cm

Adenoma " > 5 cm

* Central Scar

FNH : ↓ T₁, ↑ T₂

FL HCC : ↓ T₁, ↓ T₂ ± Ca²⁺ (60%)

* Pancreatic atrophy & duct dilatation:-

ID Ch. pancreatitis ⇒ + Ca²⁺

ID PMT ⇒ No Ca²⁺

* Peutz-Jegher : - hamartomas in all GIT except Oesoph.
 - No MX. potential but as. MX.

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- Hamartomatous polyps in SB - PJ \$

 Cowden $\rightarrow$ rectosigmoid

 Turcots $\rightarrow$ large bowel

- Gardner's \$:

 Ostomas $\rightarrow$ mandible #

- Pancreatic adeno CA Staging

T₁: confined to pancreas, $< 2\text{cm}$

T₂: " " " " $> 2\text{cm}$

T₃: invades outside

T₄: celiac or SMA

N₁: regional LNs

- 17 Sclerosing cholangitis $\rightarrow$ Young ♂

17 biliary cirrhosis $\rightarrow$ ♀

- HIDA scan $\rightarrow$ lack of visualization of bowel
 + photopenic area in liver
 = Choledocal cyst

- Pneumoperitoneum in infant:

 - Trauma

 - Intussusception

 - Meckel's complication

- Menetrier - Gastric mucosal hypertrophy (sparing antrum 50%)
 - Protein-losing enteropathy
 - Anemia

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Whipple → jejun & Duod. fold thickening
• No dilatation.

- Suspected toxic megacolon
→ PXR Abd. (H⁺ investigation)

- Giardia → Jejunum (fold thickness & spasm)

CMV → Cecum

TB → Cecum & ICV

MAI → Jejunum & ileum but NO spasm

Crypto → Duod. & jejunum " " "

GI
→ Bleeding in old age

① ~~DD~~ DD

2nd

Angio dysplasia → Rt. side.

↳ Angio : AV shunting & vs.

DD.

Rectal duplication
cyst

unilocular

Tailgut
cyst

Multi.

Ass. long (tail-like)
collyx.

- Tail-gut cyst Comp.:

- large → bleeding, constipation, abscess

- Mx. transfo → Adeno Ca

- Jejunal dilatation with normal folds
= Celiac disease

- Thick folds with no dilatation
⇒ Whipple & Eosinophilic GE

Thick folds + Dilatation
⇒ Amyloid, Giardia

- (N) liver < spleen by 10-15 HU in NCCT
25 u in PV phase

↑ liver density: Amiodarone, hemochromatosis,
+ Wilson, Cisplatin, glycogen storage disease

- Peri-ampullary cancer with absent double duct sign?
⇒ Main drainage through minor papilla

- Flip-flop C+ → BC\$
→ early: central C++, periphery ↓
→ late: peripheral C++, central ↓

- Echogenic liver mets ... ?
⇒ → Colonic

- Post-partum hepatic infarctions
⇒ think of HELLP \$

- HFL with peripheral washout in delayed magne
= diagnostic of Mx.

- U/S in appendicitis → loss of visualization of submucosal layer = fluid collection = Perforation

- Massive splenomegaly:
CML >> NHL

- Lymphoma of GIT → Ileum #
except 2% to celiac dis → Jejunum

- Klatzkin tumor associated with Carcinoid disease

② Succeeding AFAQ

- Mesenteric Carcinoid - mets. to mesentery.

- Appendicular Carcinoid vs Adeno CA

distal $\frac{1}{3}$



proximal $\frac{1}{3}$



- ! most common finding of PMC
 ⇒ Colonic wall thickening

- # Finding in shock bowel
 ⇒ ++ mucosal C+ (HU > procs)
 ⇒ Wall thickening.

- Post - Roux - en - Y ex.

< 12 mo. → stricture, intussusception, hematoma

> 12 mo → internal hernia

- Colonic tumors vs diverticulitis
 ⇒ CT perfusion

- Systemic sclerosis

1st esophagus

2nd Anorectal

3rd SB

- FLC → SCC or CA++ (not in FNA)

- Irresectable cholangio carcinoma: involving

→ Main PC or both branches

→ Main HA " " " "
or one PC & other HA

- MEN 2A: may be assoc. Carcinoid & Cushing

- Pancreatic mets → ~~not~~ RCC

- Glucagonoma vs. Somatostatinoma

↓
Body / tail

↓
Head / duodenum

- VIPoma: body / tail

- 50-80% turn MX.

- Watery diarrhea

- RFA of HCC: tumor seeding 0.5%.

- ^{internal} Hernia after R-Y bypass?

- SBO < 5% ~~not~~ Aff. limb obstruct →

- Lap. > open stomach distended.

- Doud. diverticulum:

- Medial aspect of 2nd part

- Auto-immune hepatitis → enlarged per-portal space

- Wilson disease: Hyperdense nodules on NCCT

- IPMT: ♂ > ♀, variable appearance

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- DD of ↓ or Absent folds:

- Scleroderma
- Strongyloides
- Cystic fibrosis

- HIDA scan: - non-visualized bowel (+)

- Non u GB

⇒ opiates overdose

- Conventional fistulography has higher spatial resolution than CT & temporal

- CT fistulography: iodinated contrast diluted 1/10.

- Gastric lymphoma vs adeno

↳ Multi-focal

↳ preserved fat planes around stomach.

- GIST → 50 yr

- Heterogenous exophytic

- Gastric GIST less aggressive.

- # Vascular complication of liver transplant?

⇒ hep. A. thrombosis.

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③ 300 SBA Gupta

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- 80% of adult intussusception = idiopathic.

- FAP assoc. duodenal adenoma

- PJS → jejunal polyps

- Turcotte's → Medulloblastoma

- Angiodysplasia → early draining vein

- Menterier - greater curvature, spare antrum
- Hypo Na^+ , ↓ HCl

- Mesenteric cyst → ± Ca^{+2}

→ Amebic vs. Pyogenic Abscess

↓
- Nodular wall

- Septations

- less common

- Duodenal diverticulum → wind-sock deformity

Duodenal duplication cyst → not communicate with true lumen

- Enteric (rectal) cyst → thin Ca^{+2}

- Worm-like polyps = filiform = post-inflam.

- Cystic masses within peritoneum $\rightarrow$ pseudomyxoma
- Dorsal duct $\rightarrow$ minor papilla
= Divisum
- NHL $\gg$ HD to cause HSM.
- Colonic wall thickening ... ischemic?
 - watershed area
 - Risk factors
 - $\downarrow$ mucosal C+
 - Pneumatosis coli, PV gas or perforation
- Desmoid tumors:
 - Previous surgery
 - Rock hard swelling
 - $\downarrow$ T₁ & T₂
- Candida:
 - longitudinal filling defects
 - Spares lower Esoph.
- Varices best seen on Mucosal relief views
- Boerhaave & tear of lt. lat. wall above GEJ
- Mallory-Weiss tear without perforation
- Aphthous ulcers: thin surrounding halo

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④ OXford

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- After Billroth II $\rightarrow$ free air, fluid in subhepatic space extends to peri-pancreatic area

$\rightarrow$ leakage from duodenal stump.

- N. esophageal folds $\rightarrow$ longitudinal
IF horizontal $\rightarrow$ feline

- Islet cell tumor:

$\rightarrow$ gastrinoma: head, 60% Mx, PUD++

* Carcinoid (33%)

33% Small bowel

33% multiple

33% Mx.

33% ass. with 2nd Mx.

- Appendiceal # 50% but only 7% of metastatic carcinoid (SB = 75%)

- If < 1 cm $\rightarrow$ mets is 2%.

> 2 cm $\rightarrow$ " 85%.

* Ranson Score of pancreatitis

If 1 = mild pancreatitis $\rightarrow$ U/S e/in 24 hr

* ERCP is not # in pancreatitis now.

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- Both benign & Mx. GU more common in lesser curvature.

- Splenic trauma (AATS)

Grade 1 - Subcap. hematoma $< 25\%$ splenic surface
- laceration $< 1\text{cm}$ deep

2 ... $25-50\%$
... $1-3\text{cm}$

3 ... $> 50\%$ (No cl. length)
... $> 3\text{cm}$

4 laceration to ! hilum, devas. $< 25\%$

5 Shattered (multiple lacerations) or
vascular pedicle avulsion

* Radiology less important than clinical ...
ie. unstable pt. $\Rightarrow$ surgery.

* FUP for delayed splenic rupture.

* Stalked coin appearance: $\Rightarrow$ intra-mural hge in syst. sclerosis
- Packed folds of @ thickness & dilated bowel
= hidebound = accordion

Systemic sclerosis - Pseudo-diverticular $\Rightarrow$ mesenteric border
- Transit time $\uparrow$
- Mega duod. (to SMA level)
- Pneumatosis cystoides

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* ~~Most~~ Most specific finding of appendiceal perforation
= Abscess formation

± extra-luminal air

± SB ileus

* Contra-indication to PTC:

- PT: ~~2~~ 2 cm > control

- Platelet < 100,000

- Hydatid disease

* If distal CBD stricture + suspected cholangitis
⇒ ERCP (not PTC → septicemia)

* Metallic stent → can't be removed, - used in irresectable
Mx.

Plastic stent → can be removed

* DD target lesion in liver central echogenic (6)

① Mets

② Sarcoid

③ Candida

④ Lymphoma

Not hemangioma

* Barium meal:

RAO view → body & antrum

Supine → Greater curve & antrum

left lat → fundus

LAO → lesser curvature

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- Rt. para colic space communicates with pouch of Douglas & Rt. Subphrenic
- Lt. para colic not communicate with left Subphrenic phrenico-colic ligament
- Lesser sac communicates with abd. through f. of Winslow.

- Peri-pancreatic LNs removed in Whipple
So not indicating irresectability
Other regional LNs = irresectable.

1st amyloidosis $\Rightarrow$ heart (#1) $\Rightarrow$ Small bowel & lung.

2nd " $\Rightarrow$ Kidneys #1

~~Amy~~ - GIT / Small bowel amyloidosis.

$\Rightarrow$ Fold thickening

$\Rightarrow$ Rigidity

$\Rightarrow$ Dilatation

* Klatskin's - Delayed C+ in CT / MRI

* Air in GB after ERCP = (N) dist. sphincterotomy

* Porcelain GB $\rightarrow$ MX. 10-20%

* Feline Oesophagus as. e' GERD (mild)

- Barium concentration wt. / vol. ratio:

Small bowel enteroclysis 18%.

Barium follow-through 50%.

Barium enema single contrast 70%.

- " " double " 125%.

- " Swallow 150%.

- " meal 250%.

- CT in SBO

- Early: ↑ mural density (d.t. hyperemia)

→ wall thickening (submucosal edema)

→ limits peristalsis → dilatation →

compression! capillary → lack of wall C+

→ pneumatosis

- Total colonic resection & J-pouch.

→ Ulcerative colitis & FAP

- TB versus Chron's

↳ involve cecum + terminal ileum

- FNH - Doppler: central vascularity

- US iso / hypo

- FNA of pancreatic cystic lesion:

→ Mucin → mucinous tumor

→ ↑ amylase → pseudocyst

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* Reverberation artifact in GB wall, curvilinear with fever

⇒ emphysematous cholecystitis.

* Regenerating nodules → C+ in (A) & (PV) phase
↳ uptake of both hepatocellular & ~~Kupfer~~ SPIO particles.

* Hemochromatosis ⇒ in- & out- of phase
⇒ Gradient T2 wt ↓↓

* Suspected VHL

→ MRI Brain + whole spine

→ Ophthalmology referral

→ Genetic counseling

* Cause of death: RCC, hemangioblastoma

* Barrett → mid-esophageal stricture

* Ba swallow ⇒ Esophageal plaques & nodules

Candida vs Glycogen acanthosis

Immune compromised

odynophagia

longitudinal plaques

elderly

Asymptomatic

Rounded

(MRI)

(CT)

* THID or THAD: ~~THAD~~

* Peripheral wedge-shaped area, vs. crossing

* ↑ C+ in (A), iso in PV & delayed

* due to ↗ non-tumorous AP shunt

↓ Distal PV flow obst.

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- Atrophic upper esophagus & distended hypopharynx
- polymyositis
- ↳ skeletal ms → upper $\frac{1}{3}$

DD. Dermatomyositis

- Grading of severity of pancreatitis:

① Balthazar CT staging (best): most accurate after 2 days to detect necrosis & fluid collection

(Necrosis < 30%, 30-50%, > 50% of the gland)

② Ranson Clinical scoring

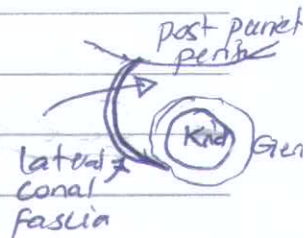
③ APACHE II (Acute Physiology And Chronic Health Evaluation)

* Anterior para-renal space

Contains: pancreas

2nd / 3rd Duod

Asc. & desc. colon



* Complication of Barium enema:

- Cardiac arrhythmia d.t rectal distention
- venous intravasation → PE → death
- water intoxication → convulsions
- Perforation
- Barium impaction
- Transient bacteremia
- Euphoran → arrhythmia, prostatic,

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* Pseudomyxoma retroperitonei:

- Rupture of mucinous lesion in retrocecal Apr.
- Cystic collection + Ca^{++}

* Pancreatic injury: CT grading (Wong)

supportive $\leftarrow$ Grade A $\rightarrow$ laceration $< 50\%$ thickness
the
pancreatic duct injury $\leftarrow$ $\left\{ \begin{array}{l} B_1 \rightarrow < 50\% \text{ pancreatic head} \\ B_2 \rightarrow \text{transection of pancreatic head} \\ C_1 \rightarrow \text{laceration } > 50\% \text{ tail} \\ C_2 \rightarrow \text{transection of " "} \end{array} \right.$

$\downarrow$
surgery or ERCP & stenting

* Shwachman-Diamond: infant

- Pancreatic exocrine def. $\rightarrow$ malabsorption
- Bone marrow abnormality $\rightarrow$ Rec. infection
- Skeletal abnormality

* Sclerosing mesenteritis

- Mass in root of mesentery
- fat-halo sign
- $\pm Ca^{++}$

* IF $GFR < 30 \text{ ml/min} \rightarrow$ MRI contrast may cause NSF.

* Pancreatic adenocarcinoma:

Best MRI dynamic $\rightarrow$ hypo in Ar phase.

* Biliary scintigraphy for cholecystitis:

(N) GB visualized $< 1 \text{ hr}$

Acute CC: GB not visualized 1, 4 hr

CCC: GB a.u. in 1 hr, but seen in 4 hrs.

* Auto-immune pancreatitis

- Diffusely swollen sausage-shaped pancreas
- Peripheral ring of hypoechogenicity

* Groove pancreatitis

- Duodenal & biliary obst.
- Cystic dystrophy of the duodenum

* Acute epiploic appendicitis

- Ass. e' obesity & unaccustomed exercise

* Von Meyerburg Complex = multiple biliary hamartoma

- * Clusters of small bowel loops adherent to abdominal wall with compression, crowding & displacement of l. bowel & bl. vessels
- + previous abdominal surgery ??



⇒ trans-mesenteric hernia

- * Sac-like mass of dilated bowel lateral to lig. of Treitz, displacing & indenting! adjacent stomach & descending colon
⇒ left para-duodenal hernia (fossa of Landzert)

- * Cluster of dilated SB lat. & inferior to 2nd part duod.

⇒ Rt. para-duodenal hernia (fossa of Waldeyer)

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- Accordion sign = Pseudo-membranous colitis #
(pan colitis).

- Idiopathic eosinophilic esophagitis:

- ♂, 20-40 y, dysphagia, history of Allergy
- long stricture & rings

- # cause of enteritis in AIDS pb.

→ Cryptococcosis

- Cavitary mesenteric LNs:

- Whipple disease (fat)
- Cavitating mesenteric LN & (celiac dis.)
- TB

- PET/CT is not good in RCC (not avid)

- Splenic cysts:

→ $\pm Ca^{++}$

↳ pseudo post-traumatic cysts # (80%)

↳ True (20%)

↳ Parasitic: hydatid

↳ Non-parasitic: epidermoid 2.5%

* Best to DD CBD stones vs. Pneumbilia

Air   stone → Axial T2 GR steady-state

* SPIO particles: → RES (Kupffer cells)

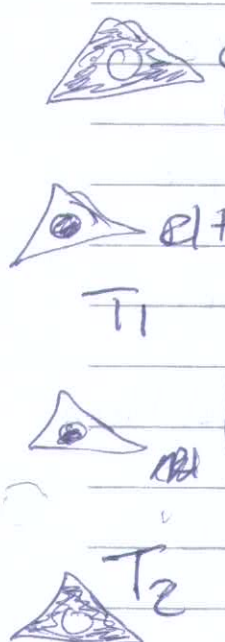
After Injection → T2 WT → normal
liver ↓↓ low SI, tumors ~~show~~ appear
↑↑ → except FNH (contains Kupffer)

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* Hepatic MRI Contrast

- 
- The diagram shows three triangles representing different MRI contrast agents. The first triangle is labeled 'T1' and has a bracket pointing to it from the text '① Gadolinium: extra-cellular (↑T1) tumor → bright in T1 + c'. The second triangle is labeled 'T1' and has a bracket pointing to it from the text '② Mangafodopir: Manganese-based, hepatocyte-specific (taken by hepatocytes → excreted in bile) tumor → dark in T1 + c'. The third triangle is labeled 'T2' and has a bracket pointing to it from the text '③ Gadobenate dimeglumine: as 2'. The fourth triangle is labeled 'T2' and has a bracket pointing to it from the text '④ SPID → Tumour bright in T2'.
- ① Gadolinium: extra-cellular (↑T₁)
tumor → bright in T₁ + c
 - ② Mangafodopir: Manganese-based, hepatocyte-specific (taken by hepatocytes → excreted in bile)
tumor → dark in T₁ + c
 - ③ Gadobenate dimeglumine: as 2
 - ④ SPID → Tumour bright in T₂

* Desmoid tumor in Gardner's

- Root of mesentery #1 > abd. wall

* RFA of HCC → "mural nodule in cyst"
in CT months after RFA
= Biloma.

* Celiac disease + focal thick nodular folds

⇒ suspect lymphoma.

* MR enterography

- large volume / fluids.

- Fat-suppression, IV Contrast

* Crohn's in MRE

earliest → mucosal e + a

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⑤ Granger

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- * Mucinous tumor of pancreas: cysts $> 2\text{ cm}$
- * HCC:
 - Small hypoechoic, large $\rightarrow$ hyper
 - Mets $\rightarrow$ lung
 - Brain mets $\rightarrow$ hypervascular.
- * Pancreatitis $\rightarrow$ sentinel loop sign (focal ileus)
- * "Bull's eye" in stomach Ba meal $\rightarrow$ DD.
 - ulcerated mass - GIST
 - NF = single or multiple
 - Melanoma: $\neq$ submucosal mets
 - Gastric CA
- * US in acute appendicitis
 - sensitivity 75-90%
 - specificity 85-100%
- * Toxic megacolon:
 - Tr. Colon $> 5\text{ cm}$
 - severe ulcers & mucosal islands.
- * Liver biopsy
 - 65% of complications $< 2\text{ hr}$
 - 96% " " $< 24\text{ hr}$
- * Hypoparathyroidism $\rightarrow$ soft tissue Ca^{++}
No pancreatic Ca^{++}
- * Hereditary pancreatitis - coarse rounded Ca^{++}
- AD

- * Hot drinks & carbonates relaxed LES in Achalasia
- * Hepatic adenoma: loss of signal in out-of-phase
- * Rectal tumor with peritoneal invasion = T4
- * Hepatic cyst with echogenic debris
 ⇒ hydatid sand
- * Cholesterol crystal in Rokitsansky-Aschoff
 sinuses → Comet-tail of adenomyomatosis
- * Line crossing! base of! ulcer = Hampton = benign.
- * Cecal volvulus: haustration + gas in appendix
- * Hidbound ↑ no. of folds (not thickness)
- * FAP 100% colorectal CA 20x after diagnosis
 Ass. e/ hamartomas in stomach, gastric &
 duodenal adenoma & peri-ampullary CA.
- * ^{Santorini} Dorsal pancreatic duct opens in ~~best~~ minor
 papilla ⇒ divisum
- * Radiation enteritis
 - RTH pelvis (gyn or rectal Mx)
 - Ileum or distal jejunum
 - Thick wall ± adhesions ± fistula.
- * Ca^{+2} in ! central scar: FLC ⇒ FNH

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- * Peritoneal TB - peritoneal nodules
- High density ascites
- Necrotic LNs
- * If suspected anastomotic leak:
we use water-soluble contrast 1st ... if we
can use Barium
- * Budd-Chiari - Ass. c' polycythemia rubra
- Hepatic Angio → spider's web.
- * Pancreatic cancer with $> 180^\circ$ 50% contact
with SMA = irresectable
- * Squeeze sign by US colonic lipoma
Change shape when compressed.
- * Esophageal intra-mural pseudo-diverticulae
= flask-shaped outpouchings.
- * Infected pancreatic necrosis = gas
- * VHL → serous cystadenoma of pancreas.
- * PSC 10% → Cholangio CA
- * CT colonography
- Supine & prone images
- + IV contrast.
- * In esophageal dysmotility: avoid repeated
swallowing (only single bolus of Barium)

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* Pneumatosis coli: (N) finding in CPTD pt.

* Krukenberg - Stomach > Colon (2nd)

- CA-125 slightly elevated (DD 17 ovarian
Mx.)

* Liver transplantation $\rightarrow$ multiple hypodense
focal lesions + SB thickening
 $\Rightarrow$ PTL D

* U/S finding in acute hepatitis $\Rightarrow$ (N)

* PMC - mild pericolic stranding

- Rectal sparing $\approx$ 10%

- Ascites 40%

* 50% of pancreatic pseudo cyst resolve spont.

* RBC scintigraphy $\rightarrow$ most sensitive for
GIT bleeding

Rate - 0.1 ml/min

Angio = 0.5 " "

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⑦ Get Through

PAGE

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* Systemic sclerosis

- Skin #1, GIT 2# (esophagus#)
- Patulous LES → Barrett → stricture

* Hospitalized pt. → colitis. ?

- PMC

* Most severe colonic wall thickening - ?

- * PMC

- * Chron's → SB involved -

* PMC vs. ischemic

Fold thickening

+++

Diffuse

Relatively mild
pericolonic
stranding

+

- segmental watershed

* Esoph. CA staging -

- EUS → T-stage

- PET/CT → NM stage.

* Mx.	vs.	benign ulcer
- ulcer crater - Confined within gastric contour		- Projecting ~~into~~ outside. - Hampton line - folds reach margin - Associated DU - central ulcer within smooth mound



* Celiac disease → no fold thickness
→ Flocculation, segmentation, Moulage

* Fatty Liver

- NCCT < 40 HU, hyperdense vs.
- CECT < 10 HU than spleen.

* Defecography

- Injection of Ba via Foley's in lt. lat. position
- Imaging in sitting position

* Femoral hernia: medial to fem. vein, infero-lat. to pubic tubercle

Inguinal H → Supero-medial to pubic tubercle
 ↳ indirect: lat. to inf. epigastric A
 ↳ Direct: med. u

Obturator hernia bet. pectineus & ext. obturator

- Staging of cancer colon:

→ CT chest PA

NB PET/CT in recurrent tumor.

- Diverticulitis may cause inferior mesenteric vein thrombosis.

NB SMV thrombosis is much more common.

- very low-density ascites = mucinous
= pseudomyxoma ($\pm$ Ca++)

Peritoneal nodules & omental cake + ascites
→ peritoneal mets.

peritoneal thickening & nodules + small ascites
→ mesothelioma.

- Insulinoma: usually < 2 cm → symptomatic
- Any part of pancreas.

Amebic vs Pyogenic hep. Abscess

* Solitary
* well-defined
* surrounding halo
* Continuous with capsule

- Solitary or multiple
- Ill-defined by 4/5
- $\pm$
- $\pm$ Gas.

clinically * young age
* Acutely unwell
* Travel or endemic area

- Assoc. cholangitis dit.
biliary obst
- Abscess in liver

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Necrolytic migratory erythema ass. $\rightarrow$
Glucagonoma (c 10 wt. loss, diarrhea, DM)

- $\rightarrow$ large > 2.5 cm
- $\rightarrow$ Body / tail
- $\rightarrow$ Mx. transformation & mets $\uparrow\uparrow$

- GIT bleeding $\rightarrow$ colonoscopy if not
conclusive $\rightarrow$ Angiography $\rightarrow$
if not conclusive $\rightarrow$ CTA

- RBC - Scintigraphy : most sensitive, but
poor anatomical localization.

- Achalasia in old age = 2 $\times$ to gastric CA
(or lymphoma or mets) $\rightarrow$
infiltrating myenteric plexus (not exoph. CA).

- PJS - 50% AD, 50% sporadic
- # polyposis of SB
- May cause intussusception
- $\uparrow$ risk of Mx.

* Phyto-bezoars : (fibres) $\neq$ Bezoar
- Previous gastric surgery
- Mobile filling defect

* Submucosal esophageal lesion + Ca^{++}
 $\rightarrow$ leiomyoma

* GIT mets SB $>$ Colon & Stomach

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- Esophageal rupture: iatrogenic ~~#~~ > spont.

- ~~low~~ HFL not seen in CT except in
Arterial phase $\uparrow\uparrow$ C+
 $\Rightarrow$ FNH

- Perforated DU ant. wall $\rightarrow$ pneumoperitoneum
post. " $\rightarrow$ pneumo retro-periton.

- SMA $\angle$
- Rapid wt. loss or prolonged bed rest
- Abd. pain & vomiting, improved
in prone or knee elbow position.
- SMA / aorta ratio 10-22°
(N = 45° - 65°)

- Duod. duplication cyst $\rightarrow$ compress 1st & 2nd part duod.

- Crohn's usually @ rectum

- PK gas:

Adult: d.t. mesenteric infarction, poor prognosis

Infant: d.t. NEC, not necessarily poor prognosis

- Acute abdomen + Appendicolith in AXR
= 90% acute appendicitis (with
 $\uparrow$ risk of gangrene)

- Candidal esophagitis
- Ass. oral thrush
- upper esoph.

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- Herpes esophagitis: multiple, small

CMV & HIV $\rightarrow$ large solitary

- Buscopan $\neq$ uncontrolled cardiac disease

- Carcinoid tumor $\rightarrow$ calcified

- Hepatic Adenoma vs FNH

* related to OCP

* usually > 8 cm

* NO Scar

* Sulphur colloid -ve

* Hgc ++ subcaps /
peritoneal

NO

< 5 cm

Scar

+ve

-

- Falciform lig. separates Rt. & Lt. subphrenic

- Pneumoperitoneum:

- Best erect CXR $\rightarrow$ erect abdomen
 $\rightarrow$ Lt. lat. decubitus $\rightarrow$ supine
Abd. x ray

- IHBRD is dilated if $> 40\%$ of adjacent PV
(from CMA)

- GDA passes behind 1st part of Duod. So
perforated posterior wall DU may cause severe hgc
if invading vens Art.

- SPIO particles $\uparrow$ detection of HFL but not character.
So used with Gd.

- Acute BC\$ may occur in pregnancy
VOD may occur following RTH / CTH
- ↑ density of liver, spleen & LN with stippled appearance
⇒ thrombost (old age) / minimal
- Cholesterosis by U/S → (W) or polyps
Adenomatosis → Comet-tail artifacts
- Cholangiography → string of beads = PS

DD: Complicated diverticulitis vs colorectal CA

- long segment	- short
- smoothly tapered	- Abrupt
- Intact mucosa	- Mucosal ulcer
- Colovesicle fistula ++	+

* Intra-mural pseudo-diverticulosis:

- Ass. w/ distal esoph. stricture
- DM, Ch. alcoholism, severe esophagitis
- Candida → 2° infection.

* Borchardt Δ:

Acute severe epigastric pain

Intractable retching with no vomiting

Failure to pass Ryle

⇒ Acute gastric volvulus

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* Improve accuracy of Meckel scan:

- Cimetidine: H_2 antagonist, $\downarrow$ gastric uptake
- Pentagastrin: $\uparrow$ uptake
- Glucagon: $\downarrow$ peristalsis

⊕ Empty UB, fasting, avoid laxatives.

* Celiac disease

- caudating LN + fat-fluid level
- Splenic atrophy.

* Calcified Scan in HFL = FLC

* Cystic fibrosis $\rightarrow$ high dose lipase supplementation $\rightarrow$ fibrosing colonopathy (Stricture of Rt. Colon)

* Normal post-transplant findings:

- Peripheral parenchymal edema
- Peri-hepatic & hilar fluid collection
- Mild ascites & Rt. pleural eff
- Per-portal edema.

* Multiple intra-mural hypodense nodules in GB

$\rightarrow$ XGCC

* Epiphrenic diverticulum

- Rt. lat. wall of distal esoph.
- Assoc. HH.

* the of Barium aspiration $\rightarrow$ physiotherapy

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Gastric banding

- laparoscopic with subcut. port,
inflatable $\rightarrow$ neo stomach or pouch.

- Stoma (N) 3-4 mm

- Commonest complication: pouch dilatation:

- ① Acute concentric dilatation = band over inflation $\rightarrow$ decompression of 1 stom.
- ② Chronic concentric dilatation d.t. over feeding $\rightarrow$ nutritional advice
- ③ Eccentric dilatation: d.t. slippage of the band $\rightarrow$ surgery

* Villous adenoma of rectum

- secretes mucous $\rightarrow$ diarrhea & electrolyte imbalance.
- Highest Mx. potential ($\uparrow$ with size)

DD. Solitary rectal ulcer

- Rectal polyp secreting mucous
- ASS. with ulcer
- Young ♀

* Radiation induced rectal injury:

- rectum $\rightarrow$ Narrowed, thick-walled, poorly distensible
- $\rightarrow$ Thickened peri-rectal fascia
- $\rightarrow$ Proliferation of peri-rectal fat $\rightarrow$ $\uparrow$ presacral space

* Kaposi sarcoma: skin lesions, LNs (+C⁺)

- $\pm$ multiple HFLs.

* In ^{III} labelled WBC for infection: (N) spleen, liver, BM

If $>$ spleen = abscess

= liver = inflam

$<$ BM = low-grade

RECIST - Solid tumors

- Measurable disease - Long axis only.
- non-measurable - Sum of up to 10 target (if measurable)
- LTN -> Short axis

Gastric Nx: NM staging

N₁: 1-6 regional nodes

N₂: 7-15

N₃: > 15

non-regional LNs (para-aortic, retro-peraortic)

-> M₁

Plastic vs. Metallic biliary stent

Metallic

Adv.

↑ long-term patency

larger internal diameter

low surface area -> ↓ bacterial colonization

Disadv.

Can't be removed

Pronc to shortening after deployment

Cost (10 times plastic)

EUS: 5 layers

① Mucosa / lumen interface

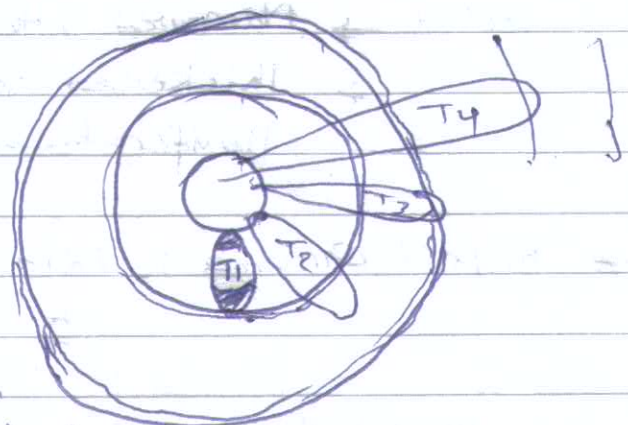
② Muscularis propria mucosa

③ Submucosa

④ Muscularis propria

⑤ Adventitia -> Esoph.

Serosa -> stomach, duod., rectum.



→ SPIO particles

- Infusion in 30 min

- ~~1~~ 1 complication: Acute LBP

- Cricopharyngeal achalasia

- (N) variant 10%, asymptomatic

- Ass. w/ GERD & HMD

- Smooth posterior projection opposite C5/6

- May cause dysphagia & dilated pharynx.

DD: web anterior

- Medullary sponge kidney in 80% of pt.
with Caroli

Caroli may have ectasia of extra hepatic bile ducts

- GIST - Expression of KIT (tyrosine Kinase GF receptor)

- Stomach ~~st~~

- submucosal + ulcer + extragastric
heterogenous mass

- Main blood supply of ! pancreas:

→ splenic Artery

⑧ Master pass (1)

esophageal mets

- d.t. direct extension $\rightarrow$ bronchogenic CA
- " distant 1st $\rightarrow$ breast (submucosal)

- Plummer vinson: - Web (anterior, uniform thickness)
- Fe $\downarrow$ Anemia
- Thyroid disorders
- Spoon-shaped nails.

Absolute contra-indication for oral Cholecystogram
 $\Rightarrow$ Serious liver disease

High pressure on manometry $\rightarrow$ DES

Most common Mx. in lower esophagus $\rightarrow$ SCC

Old age with epigastric pain & early satiety,
 Ba $\rightarrow$ narrow stomach, $\downarrow$ folds
 $\Rightarrow$ Atrophic gastritis

Clotted blood 60-100 HU

Fresh " 30-50 "

Active extra > 180 HU (CECT)

Duodenal injury as e' injury in -

Blunt trauma: Pancreas $>$ liver

Penetrating " : Liver $>$ Pancreas.

Site of traumatic SB injury = anti-mesenteric
 border of proximal jejunum $\rightarrow$ bubble of gas close to it
 = disruption of wall

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- ~~intussusception~~ in children → ileocolic

- Old age with suspected mesenteric ischemia:
→ bowel distention to splenic flexure
= SMA compromise

- Turcut : polyps + GBM / MB

- PET/CT not for 1st staging recto/sigmoid CA

- Shigella & Salmonella → RT. sided Colitis

- Pancolitis + Ascites : PMC > UC

FNH	vs	adenoma
RES contrast agents	+	+
Hepatocyte contrast agents	+	-

- Adenoma not take hepatobiliary contrast

- Turtle black appearance : liver cirrhosis by UPS
due to Schistosomiasis.

- # 1st metastasize to spleen = malign. melanoma

- Normally in adults

T₁ WI : Liver > spleen > MS
T₂ WI : spleen > liver

- Splenic Abscess = 75% hematogenous spread.
- Ectopic GB: beneath rt. lobe ($\neq$ 1) $\rightarrow$ intra-hepatic $\rightarrow$ retro-hep. $\rightarrow$ within falciform lig. $\rightarrow$ within interlobar fissure $\rightarrow$ supra-hepatic $\rightarrow$ within Ant. abd. wall
- Porcelain GB: 10-30% $\rightarrow$ Mx.
- Injury to duct of Luschka: accessory ducts from GB.
- Chledo-enteric fistula $\rightarrow$ Shrunken GB like pseudo-diverticulum of Duod.
- PBC - as. e' Sjogren's $\rightarrow$ 70%,
 Rh. A, scleroderma, Hashimoto
 . Caudate lobe pseudotumor
- $\neq$ sensitive for ampullary CA = Endoscopic U/S
- Pancreatic pseudocyst not contain gas
 if gas $\rightarrow$ think pancreatic abscess
- $\neq$ site of pancreatic injury: Junction of body & tail.
- Gastrinoma $\rightarrow$ ZES
- Radiation enteritis $\rightarrow$ terminal ileum stricture
 & $\uparrow$ density of mesentery.

- Absolute Contra-indication to Ba enema:
 - * Toxic megacolon & PMC
 - * Rigid endoscopy within 5 days (+ Biopsy)
 - flexible " " " " " " 1 day.
- Contraindication to glucagon →
 - Pheochromocytoma
 - Insulinoma
 - Glucagonoma
- Contra-indication to Buscopan:
 - Prostatic
 - Pyloric stenosis
 - Myasthenia gravis
 - Closed angle glaucoma
- Tertiary esophageal Contractions:
 - Non-propulsive
 - Up & down (Yo-Yo motion), without clearance of ! esophagus.
- Fixed transverse folds in distal esophagus with stepladder appearance
 - reflux esophagitis
- Indentation on anterior esophagus opposite C5
 - Cricoid impression

* Barret esophagus

- Long Stricture mid / distal esophagus
- Barret ulcers single & deep
- Fine reticular mucosal pattern
- Thick irregular folds
- Granular mucosa
- wide GEJ & reflux

* Streakhouse \$: episodic solid dysphagia d.t. Schatzki ring (< 4 mm thick)

* In III octreotide → Carcinoid tumor & mets (Panaganglioma may uptake octreoscan) ↳ MIBG

* Distended viscus with AFL, elevated R. hemi-diaphragm ⇒ Gastric volvulus.

* Benign ulcer: deep, protrudes beyond stomach Mx. " : Shallow, not

* Gastric polyps → hyperplastic # (mainly body & fundus)

* NSAID → erosive gastritis → complete erosions ↳ target lesions ↳ Incomplete; linear & dots.

* Organo-axial volvulus: along long axis of stomach, greater curvature rotates cranially



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- * CF causes thick duodenal folds, m. in colon, SB obstruction, ...
- * Small bowel source of bleeding
→ ~~#~~ leiomyoma (ulcerated)
- * Linear SB ulcers in 1 mesenteric border = Crohn's
Double-track colonic ulcers = UC
- * Best for intussusception reduction:
- Hydrostatic reduction at 120 mm Hg
- Role of S : 3 attempts max. , for 3 min
allowing 3 min in between.
- * ~~#~~ site of Carcinoid: Appendix
- * Rectal involvement: UC 95% , Crohn's 50%.
- * False +ve Meckel's Scan:
 - Duplication cyst, Barrett esoph., duod. ulcer
 - Appendicitis, intussusception, UTI, IO
 - AVM, ~~the~~ hemangioma, hypervascular tumor, aneurysm
- * False -ve : hgc, Rapid transit, ileal malrotation
- * Angiodysplasia as. with Aortic stenosis 20%.
- * Lynch S (HNPCC)
 - I → no extra-colonic Mx.
 - II → + " " (esp. TCC)

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* Pneumatosis intestinalis - causes

① Bowel necrosis & gangrene

② Mucosal disruption.

③ ↑ mucosal permeability

⇒ ④ Pulmonary disease. → Generally well,
- PV & mesenteric gas can be seen

* NEC : pneumoperitoneum is bad prognosis
- PV gas is not so bad.

* Pancolitis + ascites + Aphthous ulcers in HIV
⇒ CMV colitis.

* Cecal volvulus : Kidney-shaped, if cecum > 10-c
⇒ perforation.

* site of enterocolic fistula in caehn's = ilio-colic

True polyp	Pseudopolyp
uniform in size	uniform
Rounded, sessile or stalked	Y-shaped, filiform
well-defined	Fuzzy, ill-defined
Preserved colonic haustra	Distorted haustra

* sigmoid volvulus → twisting of mesentery by CT

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SPH

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* Acute vs. chronic BC\$
↓
caudate lobe hypertrophy

* Central scar DD FNH or vs Adenoma(x)

* Liver mets: Colorectal > gastric > pancreatic > breast > broncho

* Splenic Angiosarcoma: ↓ T₁ & T₂ (hemosiderin d.f. by

* Polysplenia as: or malrotation is 80%.

* Elderly obese female, smoker with GB stones
↳ focal GB wall thickening = GB Carcinoma

* GB mud → 50% resolve
→ 15% stones

* Spread of GB cancer → local infiltration of liver
" " CholangiocA → lymphatic to cystic LNs?

* Classic Whipple → 3 anastomosis: gastro-jejunostomy
choledcho-jejunostomy, pancreatico-jejunostomy.

* Hereditary pancreatitis: AD, multiple spherical
pancreatic Ca++ in childhood, recurrent pancreatitis
→ pseudocyst, carcinoma.

* # pseudo-aneurysm after pancreatitis → splenic

* Acute pancreatitis: early imaging → U/S, late
for complications → CT.

Pancreatic parenchymal injury without major trauma to major duct $\Rightarrow$ Grade II

Feature	Pancreatic Serous micro	Mucinous cystic
No. of cysts	> 6	< 5
size "	< 2 cm	> 2 cm
Ca ⁺⁺	40% , amorphous	20% , rim
C ⁺⁺	Hyper ++	Hypo (peripheral C ⁺)
Cyst content	Glycogen	mucin
Other	central scar	spread,
	> 60 y	40-60 y
	Head	body or tail
	Benign	Pre-MX

Irresectable pancreatic CA

- Extension beyond pancreas.
- Encasement of vs.
- Enlarged regional LNs.

Intestinal TB - Deep fissures & large shallow ulcers with elevated margins.

* Jejunum vs ileal loops

<u>diameter</u>	3-3.5 cm	2.5 cm
	Thick valvulae	Thinner
	Thick wall	Thinner
	1-2 arterial arcades	3-4
	Few Peyer's patches	More

* Inflammatory esophago-gastric polyp?
- Polypoid protuberance near I. cordis

* Chagas disease: Esophageal dilation, Megacolon, cardiomyopathy.

* Esophageal CA + celiac node → M1b stage

* Diagnosis of Biloma → HIDA Scan.

* After Billroth II / gastro-jejunostomy → blind-loop & (Afferent loop)

* ~~##~~ Bull's eye lesion in stomach → submucosal mets ..., ~~##~~ Malignant melanoma.

* Ectopic pancreatic rest → submucosal ulcerated mass.

* 95% of intestinal trauma → Duod. & prox. jejunum

* Carcinoid tumor → necrotic LN
→ 2nd 17 GI Mx, 30%.

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* Rt. para-duodenal hernia

→ # internal hernia

→ Displaces the inf. mesenteric vein.

* Behcet → terminal ileum ulcers.

* Mesenteric Angio for bleeding.

— IMA before SMA (UB obscures IMA)

— Celiac not routine

* Pre-sacral space: (N) $< 5\text{ cm}$, Abn. $> 10\text{ cm}$

* Benign colonic polyp: single, small ($< 1\text{ cm}$), smooth pedunculated, with smooth underlying colon

MX polyp: Multiple lobulated large sessile with indented / retracted colon

* Salmonella → Rt. hemicolon #

* Hemangioma: ↓ T₁ & ↑ T₂

* Post liver transplant: (N) ↑ periportal attenuation

* Most sensitive for liver Mets: MRI > CECT > PET/CT

* Pyogenic abscess in liver → through bile ducts

Amebic " " " " " " PV

Fungal " " " " " " Hep. Art.

* # of Splanchnic infarction: Bacterial endocarditis.

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* Erythema nodosum is # presentation of Sarcoidosis

* Emphysematous cholecystitis $\rightarrow$ air in ! lumen (echogenic Arc like area) not in wall (not specific).

organism $\rightarrow$ clostridium perfringens

* GB Mud $\rightarrow$ ~~stones~~ Mobile not shadowing

stones $\rightarrow$

polyp $\rightarrow$

not mobile, not shadowing

* Ampullary tumor $\rightarrow$ small (not seen)

peri-ampullary $\rightarrow$ larger lesion seen

* Mirizzi's : ad. c' fistula bet. GB & CHD

* Cholangio CA : Delayed C+ & peripheral washout

* Insulinoma: - # islet cell tumor in MEN I

- If $> 2\text{cm}$ $\rightarrow$ ring C+

* Ch. pancreatitis : Gland atrophy with focal enlargement

* Dense Ascites (3) DD:

TB, ovarian tumor & appendiceal tumor

* Mastocytosis : Urticaria pigmentosa

- Nodular fold thickness

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⑧ Barret

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- * Hodgkin stage II E: ~~on both~~ on same side of diaphragm, one extra lymphatic organ + ≥ 1 other groups of LN on same side
- * Subcapsular cystic lesions at spleen $\rightarrow$ lymphangioma
- * Emphysematous gastritis # E. coli
- * Vein of Sappey: drains segment IV & drains to left PV. $\Rightarrow$ focal fatty infiltration near falciform lg.
- * GIT lymphoma: complicates celiac disease.
- * VHL causes epididymal papillary cystadenoma.
- * EUS esophageal CA better than PET in loco regional LN
- * GIST lit by monoclonal AB $\rightarrow$ $\downarrow$ bl. supply to tumor $\rightarrow$ $\downarrow$ density & necrosis even with stable size
- * Hep. A. stenosis $\rightarrow$ RI $\downarrow\downarrow$ of intra-hepatic arteries, with pulsus tardus / parvus
- * Normal flow in TIPS = 50-190 cm/sec.
if $> 190 \rightarrow$ stent stenosis

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- Whipple disease: foamy macrophages, PAS +ve

- Polysplenia: ♀ > ♂, PAPUR

Asplenia: ♂ > ♀, Mortality 80% 1st year

- Early assessment of HD after 1-2 cycles of CTH by PET is better than delayed
If PET +ve → -ve = Complete response irrespective of the size of LNs

- Ogilvie's: (acute colonic pseudo-obst) occurs after MI, trauma or infection

- HIV TB → CD4 < 400
Fungal → " < 200
Viral → " < 100

- Carcinoid tumor ≠ Small bowel > APX

- Bismuth classification of cholangio CA

- Crohn's: ↓ ileal folds, sacculations

- Three types of cecal volvulus

- PXR Abd. → 0.7 mSv.

- Picture of pseudo-pancreatic cyst + enhancing rim + fever = Pancreatic abscess

Block paper

- Paroxysmal nocturnal hemoglobinuria predisposes to Budd-Chiari \$
- RECIST partial response: $\rightarrow$ 30% reduction.
- Polyposis \$ not pre Mx. Crankhite Canada
- Peri-pancreatic halo $\rightarrow$ AIP
- Amyloidosis: diffuse & density of 1 liner
- Apx. # site of actinomycosis.
- CRM -ve if $\geq$ 3 mm distance from ! tumor
 $\rightarrow$ total mesorectal excision (TME)
- PET/CT Partial response after ETH
 15% reduction after 1 cycle
 25% " " $\geq$ 2 "
- $\uparrow$ no. of folds $\rightarrow$ systemic sclerosis
- # Colonic lipoma $\rightarrow$ cecum
- If melena presents, so ! volume of bleeding $\geq$ 50 ml
 = detected by RBC scintigraphy
 occult blood = $<$ 50 cc $\rightarrow$ not detected
- NASH: 7% of population

(101)

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- Abn. loop between PV & IVC
⇒ Foramen of Winslow
- ~~#~~ SB intussusception in adult
⇒ polyp.
- H. pylori ⇒ GU, DU, GA, CA, lymphoma
- HIV cholangiopathy ⇒ cryptosporidium
- Best MRI sequence to detect Apx
⇒ T2WI
- PTLPD ~~#~~ in liver transplant
- Sacro-ileitis : UC > Crohn's
- NSAID risk factor for DD of ! Colon.
- Watery diarrhea, ↓ K⁺, achlorohydria
⇒ VIPoma
- Von Meyenberg Complex = biliary hamartomas